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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Karla M. Weyand
Rogalskyj & Weyand, LLP
PO Box 44
Livonia, NY 14487-0044

EXAMINER	
RAMIREZ, DELIA M	

ART UNIT	PAPER NUMBER
1652	

DATE MAILED: 07/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/689,576	ALESSI, DARIO RENATO	
	Examiner	Art Unit	
	Delia M. Ramirez	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) *10-16,18-27,29 and 33-35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,17,28 and 30-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 08/943,667.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/18/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *alignment*.

DETAILED ACTION

Status of the Application

Claims 1-35 are pending.

Applicant's amendment of claims 19-23, 25, 28, 32-35 as submitted in a communication filed on 4/20/2006 is acknowledged.

Applicant's amendment of the specification which adds sequence identifiers and capitalizes trademarks as submitted in a communication filed on 5/8/2006 is acknowledged.

Applicant's election with traverse of Group I, claims 1-9, 17, 28, 30-32 drawn in part to a protein comprising SEQ ID NO: 3, in a communication filed on 4/20/2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Applicant points out that claim 1 is a linking claim and request withdrawal of the restriction requirement as to the linked claims (claims 10-15 and 33-35) if claim 1 is found allowable. Applicant also notes that process claims which depend from the elected product claims will be rejoined in accordance with the provisions of MPEP 821.04.

It is noted that at this time, no product claim is allowable. Thus, in accordance with MPEP 821.04, rejoinder of process claims is not required. With regard to arguments indicating that claim 1 is a linking claim, as previously indicated in the restriction requirement mailed on 3/15/2006, Groups I-VI are members of an improper Markush group as they lack unity of invention according to MPEP § 803.02 . The claims in Groups I-VI depend upon claim 1 and are directed to polypeptides comprising SEQ ID NO: 3, 4, 5 and polypeptides encoding said polypeptides. Claim 1 is not considered a true generic claim but an improper Markush claim. A proper Markush claim according to MPEP § 803.02 includes a group of species which share a common utility, and share a substantial structural feature essential to that utility. The proteins recited in claim 1 comprise an unrelated amino acid sequence. As such, each of the proteins

recited in the Markush group can elicit different antibodies. Similarly, the nucleic acids encoding the proteins recited in the Markush group comprise an unrelated nucleic acid sequence as they encode proteins having an unrelated amino acid sequence. As such, each of the nucleic acids recited can be used to probe different targets. While the species in the Markush group share a common utility, there is no substantial structural feature disclosed as being essential to that utility. As such, claim 1 is simply an improper link for patentably distinct inventions within a single claim and not a generic invention encompassing patentably distinct species.

The requirement is deemed proper and therefore is made FINAL.

Claims 10-16, 18-27, 29, 33-35 are withdrawn from further consideration by the Examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. Claims 1-9, 17, 28, 30-32 are at issue and are being examined herein to the extent they encompass the elected subject matter.

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. It is suggested the title "Enzyme" be replaced with the actual enzymatic activity being disclosed in the specification. Appropriate correction is required.

2. The specification is objected for not complying with sequence rules. While Figure 17 displays an alignment of several sequences, neither the drawings nor the Brief Description of the Drawings indicate the corresponding sequence identifiers. Applicant is required to insert the corresponding sequence identifiers in the Brief Description of the Drawings, or in the alternative, amend the drawings to include the sequence identifiers in front of each sequence. See particularly 37 CFR 1.821(d). Appropriate correction is required.

Priority

3. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. 119(a)-(d) to UNITED KINGDOM applications 9705462.1 filed on 03/17/1997, 9712826.8 filed on 06/19/1997, and 9717253.0 filed on 08/15/1997.

4. Acknowledgment is made of a claim for domestic priority under 35 U.S.C. 120 or 121 to US application No. 08/943,667 filed on 10/03/1997.

5. SEQ ID NO: 1 and 3 appear to have been first disclosed in UNITED KINGDOM application 9712826.8 filed on 06/19/1997.

Information Disclosure Statement

6. The information disclosure statement (IDS) submitted on 5/18/2006 is acknowledged. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

7. Claims 1-9, 17, 28, 30-32 are directed in part to non-elected inventions (i.e., SEQ ID NO: 4 and 5). Examination of such claims will be restricted to the subject matter elected (SEQ ID NO: 3). Applicants are requested to amend the claims accordingly in response to this Office Action.

8. Claims 17 and 28 are objected to as they are dependent upon non-elected claims 16 and 18, respectively. For examination purposes, when possible, the limitations recited in claims 16 and 18 will be incorporated in claims 17 and 28. Appropriate correction is required.

9. Claims 17, 28, 30, 32 are objected to due to the fact that it is difficult to clearly demarcate the embodiments recited in those claims. The claims lack punctuation marks that would separate the different embodiments, or some kind of itemizing scheme which would make it easier to follow the text in those

claims. It is suggested, for example, in claim 30, to place a comma after the term "claim 1", eliminate the term "or" after the term "claim 1", and place a comma after the term "activity". Appropriate correction is required.

Claim Rejections - 35 USC § 112, Second Paragraph

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 4-5, 17, 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Claim 4 is indefinite in the recitation of "a substantially pure human or rabbit 3-phosphoinositide-dependent protein kinase according to claim 1 that phosphorylates and activates protein kinase Bα" as it is unclear how it further limits claim 1. For examination purposes, it will be assumed that claims 1 and 4 are duplicates. Correction is required.

13. Claim 5 is indefinite in the recitation of "a substantially pure human or rabbit phosphatidylinositol-3,4,5-triphosphate-dependent protein kinase according to claim 1" as there is no antecedent basis for a pure human or rabbit phosphatidylinositol-3,4,5-triphosphate-dependent protein kinase in claim 1. If the intended scope of the claim is the protein kinase of claim 1 wherein the 3-phosphoinositide is phosphatidylinositol-3,4,5-triphosphate, the claim should be amended accordingly. For examination purposes, it will be assumed that claim 5 is directed to the protein kinase of claim 1 wherein the 3-phosphoinositide is phosphatidylinositol-3,4,5-triphosphate. Correction is required.

14. Claim 17 is indefinite in the recitation of "a human ....protein kinase that phosphorylates....or a fusion protein comprising said protein kinase or a fragment of said fusion protein or a fusion protein comprising said fragment obtainable by the method of claim 16" for the following reasons. As written,

the term "a fusion protein comprising said fragment obtainable by the method of claim 16" implies that either the fusion protein or the fragment are obtainable by the method of claim 16. However, the method of claim 16 is a method of isolating the protein kinase of claim 1 which is neither a fusion protein nor a fragment. For examination purposes, no patentable weight will be given to the term "obtainable by the method of claim 16". Correction is required.

15. Claim 28 is indefinite in the recitation of "a means for carrying out the method according to claim 18" for the following reasons. The term "means" has not been defined in the specification or the claim, thus it is unclear as to what is encompassed by the term. For example, a means for carrying out a method as set forth in claim 16 may include not only reagents but measurement equipment. In the absence of a definition, it is unclear as to what is the intended scope of the kit of claim 28. For examination purposes, it will be assumed that the term may encompass anything that would be of use in the method of claim 18. It is suggested that, if there is support in the specification, the claim be amended to clearly define which means are intended. Correction is required.

Claim Rejections - 35 USC § 112, First Paragraph

16. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

17. Claims 1-2, 3-9, 17, 28, 30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1-2, 3-9, 30 are directed to a genus of 3-phosphoinositide-dependent protein kinase that comprise SEQ ID NO: 3, fusion proteins comprising said protein kinase, or fusion proteins comprising a

fragment of said protein kinase wherein said fragment has 3-phosphoinositide-dependent protein kinase activity. Claim 28 is directed to a kit comprising the genus of 3-phosphoinositide-dependent protein kinase or fusion proteins described above, wherein said kit also comprises a genus of means for carrying out the method set forth in claim 18. Claim 17 is directed to (1) a genus of human/rabbit proteins having 3-phosphoinositide-dependent protein kinase activity and any structure, and (2) a genus of proteins having any function and structure due to the fact that the claim does not recite a functional limitation for the fragment. See Claim Rejections under 35 USC 112, second paragraph, for claim interpretation.

In *University of California v. Eli Lilly & Co.*, 43 USPQ2d 1938, the Court of Appeals for the Federal Circuit has held that "A written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula, [or] chemical name,' of the claimed subject matter sufficient to distinguish it from other materials". As indicated in MPEP § 2163, the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by actual reduction to practice, reduction to drawings, or by disclosure of relevant, identifying characteristics, i.e., structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show that Applicant was in possession of the claimed genus. In addition, MPEP § 2163 states that a representative number of species means that the species which are adequately described are representative of the entire genus. Thus, when there is substantial variation within the genus, one must describe a sufficient variety of species to reflect the variation within the genus.

In the instant case, the claims encompass a diverse genus of polypeptides, both structurally and/or functionally. In addition, the claims encompass an extremely large genus of unknown means to carry out the method of claim 18. While the specification discloses the polypeptide of SEQ ID NO: 1 as a 3-phosphoinositide-dependent protein kinase which comprises SEQ ID NO: 3 and discloses the

polypeptide of SEQ ID NO: 3 as a protein fragment of 16 amino acids corresponding to amino acids 239-254 of SEQ ID NO: 1, the specification is silent with regard to (1) other protein kinases having the same functional characteristics as that of the protein kinase of SEQ ID NO: 1, (2) whether the polypeptide of SEQ ID NO: 3 is all that is required in a protein to display the required functional characteristics, (3) which are the additional structural elements required in any human or rabbit protein besides the polypeptide of SEQ ID NO: 3 so that these proteins would have the required functional characteristics, or (4) the functions and structures of all the proteins encompassed by claim 17. It is noted that the specification is totally silent with regard to the means required in a kit as claimed.

While a sufficient written description of a genus of polypeptides may be achieved by a recitation of a representative number of polypeptides defined by their amino acid sequences or a recitation of structural features common to members of the genus, which features constitute a substantial portion of the genus, in the instant case, either there is no structural feature recited (claim 17), or the structural features recited, i.e., " SEQ ID NO: 3", "fragment of a fusion protein which comprises a 3-phosphoinosite-dependent protein kinase comprising SEQ ID NO: 3", do not constitute a substantial portion of the genus as the remainder of any polypeptide comprising said structural elements is completely undefined and the specification does not define the remaining structural features for members of the genus to be selected.

The genus of polypeptides required is a large variable genus which is partially/completely structurally unrelated and/or with the potentiality of encompassing different biological activities. While one could argue that the disclosure of the polypeptide of SEQ ID NO: 1 is sufficient to adequately describe a genus of polypeptides comprising SEQ ID NO: 3, it is noted that the art teaches several examples of how even small variations in structure result in functional variations. For example, Witkowski et al. (Biochemistry 38:11643-11650, 1999) teaches that mutations which result in one conservative amino acid substitution transform a β-ketoacyl synthase into a malonyl decarboxylase and completely eliminate β-ketoacyl synthase activity. Seffernick et al. (J. Bacteriol. 183(8):2405-2410,

2001) teaches that two naturally occurring Pseudomonas enzymes having 98% amino acid sequence identity catalyze two different reactions: deamination and dehalogenation, therefore having different function. Therefore, since (a) minor structural changes may result in changes affecting function, (b) there is no additional information correlating structure with 3-phosphoinositide-dependent protein kinase activity, (c) there is no teaching or suggestion as to which portions of the polypeptide of SEQ ID NO: 1, are required in any polypeptide comprising SEQ ID NO: 3 such that it would have the same enzymatic activity as that of the polypeptide of SEQ ID NO: 1, and (d) no information has been provided which would suggest that the polypeptide of SEQ ID NO: 3 is all that is required in a human/rabbit protein to display the required function, one cannot reasonably conclude that the polypeptide of SEQ ID NO: 1 is representative of all the species in the genus recited.

Due to the fact that the specification only discloses a single species of the genus of proteins recited, i.e., SEQ ID NO: 1, and the lack of description of any additional species by any relevant, identifying characteristics or properties, one of skill in the art would not recognize from the disclosure that Applicant was in possession of the claimed invention.

18. Claims 1-2, 3-9, 17, 28, 30 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the polypeptide of SEQ ID NO: 1, does not reasonably provide enablement for (1) a 3-phosphoinositide-dependent protein kinase comprising SEQ ID NO: 3, (2) a fusion protein comprising a fragment of the protein kinase of (1) lacking enzymatic activity, or (3) a kit comprising the protein kinase of (1). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Factors to be considered in determining whether undue experimentation is required are summarized in *In re Wands* (858 F.2d 731, 737, 8 USPQ2nd 1400 (Fed. Cir. 1988)) as follows: 1)

quantity of experimentation necessary, 2) the amount of direction or guidance presented, 3) the presence and absence of working examples, 4) the nature of the invention, 5) the state of prior art, 6) the relative skill of those in the art, 7) the predictability or unpredictability of the art, and 8) the breath of the claims. The factors which have lead the Examiner to conclude that the specification fails to teach how to make and/or use the claimed invention without undue experimentation, are addressed in detail below.

The breath of the claims. Claims 1-2, 3-9, 17, 28, 30 are so broad as to encompass (1) any human/rabbit 3-phosphoinositide-dependent protein kinase that comprise SEQ ID NO: 3, (2) fusion proteins comprising the protein kinase of (1), (3) fusion proteins comprising a fragment of the protein kinase of (1) wherein said fragment has 3-phosphoinositide-dependent protein kinase activity, (4) a kit comprising the proteins of (1)-(3), wherein said kit also comprises any means for carrying out the method set forth in claim 18, (5) any human/rabbit protein having 3-phosphoinositide-dependent protein kinase activity and any structure, and (6) any protein having any function and structure. See Claim Rejections under 35 USC 112, second paragraph, for claim interpretation.

The enablement provided is not commensurate in scope with the claims due to the large number of polypeptides of virtually unknown structure and/or function recited in the claims, as well as the complete lack of information as to the means required in a kit to carry out the method of claim 18.

The amount of direction or guidance presented and the existence of working examples. The specification discloses the structure of the polypeptide of SEQ ID NO: 1 and teaches that the polypeptide of SEQ ID NO: 1 comprises the polypeptide of SEQ ID NO: 3, which is a fragment of 16 amino acids. However, the specification provides no information as to (1) the additional structural elements required in any 3-phosphoinositide-dependent protein kinase comprising SEQ ID NO: 3, (2) whether the polypeptide of SEQ ID NO: 3 is all that is required in any human/rabbit protein to display the required functional characteristics, (3) a correlation between structure and 3-phosphoinositide-dependent protein kinase activity, (4) what is required in a kit as recited to carry out the method of claim 18, (5) the structures of

all human/rabbit 3-phosphoinositide-dependent protein kinases, or (6) the functions/structures of all the polypeptides recited in claim 17.

The state of prior art, the relative skill of those in the art, and the predictability or unpredictability of the art. The amino acid sequence of a protein determines the structural and functional properties of that protein. In the instant case, neither the specification nor the art provide a correlation between structure and activity such that one of skill in the art can envision the structure of any 3-phosphoinositide-dependent protein kinase as recited. In addition, the art does not provide any teaching or guidance as to which are the additional structural elements required in any human/rabbit 3-phosphoinositide-dependent protein kinase as claimed. It is noted that in view of the size of the polypeptide of SEQ ID NO: 3 (16 amino acids), it is unlikely that any human/rabbit protein comprising said polypeptide would display the required functional characteristics. Furthermore, the art does not provide any teaching suggesting that the polypeptide of SEQ ID NO: 3 is responsible for the functional characteristics required.

The art clearly teaches that changes in a protein's amino acid sequence to obtain the desired activity without any guidance/knowledge as to which amino acids in a protein are required for that activity is highly unpredictable. At the time of the invention there was a high level of unpredictability associated with altering a polypeptide sequence with an expectation that the polypeptide will maintain the desired activity. For example, Branden et al. (Introduction to Protein Structure, Garland Publishing Inc., New York, page 247, 1991) teach that (1) protein engineers are frequently surprised by the range of effects caused by single mutations that they hoped would change only one specific and simple property in enzymes, (2) the often surprising results obtained by experiments where single mutations are made reveal how little is known about the rules of protein stability, and (3) the difficulties in designing *de novo* stable proteins with specific functions. The teachings of Branden et al. are further supported by the teachings of Witkowski et al. (Biochemistry 38:11643-11650, 1999) and Seffernick et al. (J. Bacteriol. 183(8):2405-

2410, 2001) already discussed above, where it is shown that even small amino acid changes result in enzymatic activity changes.

The quantity of experimentation required to practice the claimed invention based on the teachings of the specification. While methods of generating or isolating variants of a polypeptide were known in the art at the time of the invention, it was not routine in the art to screen by a trial and error process for the extremely large number of polypeptides encompassed by the claims and determine (1) whether they have 3-phosphoinositide-dependent protein kinase activity, and (2) how to use them if they do not have 3-phosphoinositide-dependent protein kinase activity. It is noted that even if the genus of proteins to be tested is limited to human/rabbit, there is still a large number of proteins which one of skill in the art would have to test to find those which have the structural/functional characteristics recited, particularly in view of the fact that there is no indication that the polypeptide of SEQ ID NO: 3 is all that is required for a protein to display the required functional characteristics and no structure/function correlation has been provided. While enablement is not precluded by the necessity for routine screening, if a large amount of screening is required, as is the case herein, the specification must provide a reasonable amount of guidance with respect to the direction in which the experimentation should proceed so that a reasonable number of species can be selected for testing. In view of the fact that such guidance has <u>not</u> been provided in the instant specification, it would require undue experimentation to enable the full scope of the claims.

Therefore, taking into consideration the extremely broad scope of the claims, the lack of guidance, the amount of information provided, the lack of knowledge about a correlation between structure and function, and the high degree of unpredictability of the prior art in regard to structural changes in a protein and their effect on function, one of ordinary skill in the art would have to go through the burden of undue experimentation in order to practice the claimed invention. Thus, Applicant has not

provided sufficient guidance to enable one of ordinary skill in the art to make and use the invention in a manner reasonably correlated with the scope of the claims.

Claim Rejections - 35 USC § 102

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

20. Claims 1-2, 4-9, 17, 28, 30 are rejected under 35 U.S.C. 102(a) as being anticipated by Alessi et al. (Current Biology 7(4):261-269, April 1997; cited in the IDS).

Claims 1-2, 4-9, 17 and 30 are directed in part to a rabbit 3-phosphoinositide-dependent protein kinase, wherein said protein kinase (1) is isolated from skeletal muscle, (2) is dependent on phosphatidylinositol-3,4,5-triphosphate, (3) activates protein kinase Bα in the presence of the D-enantiomer of sn-1-stearoyl-2-arachidonyl phosphatidylinositol-3,4,5-triphosphate, (4) is activated in the presence of the D-enantiomer of sn-1,2-dipalmitoyl phosphatidylinositol-3,4,5-triphosphate, or sn-1,2-dipalmitoyl phosphatidylinositol-3,4-bisphosphate, (5) is not activated in the presence of phosphatidylinositol-3,5-bisphosphate, phosphatidylinositol-4,5-bisphosphate, phosphatidylinositol-4-phosphate, phosphatidylinositol-3-phosphate, or inositol-1,3,4,5-tetrakisphosphate, and (6) comprises SEQ ID NO: 3. Claim 17 is directed in part to a kit comprising the rabbit protein kinase described above and means to carry out a method of identifying a compound that modulates the activity of the protein kinase.

Alessi et al. disclose a 3-phosphoinositide-dependent protein kinase which phosphorylates protein kinase Bα isolated from rabbit skeletal muscle extracts (Abstract; PDK1). Alessi et al. also disclose that

the rabbit protein kinase (1) activates protein kinase Bα in the presence of the D-enantiomer of sn-1-stearoyl-2-arachidonyl phosphatidylinositol-3,4,5-triphosphate, (2) is activated in the presence of the D-enantiomer of sn-1,2-dipalmitoyl phosphatidylinositol-3,4,5-triphosphate, or sn-1,2-dipalmitoyl phosphatidylinositol-3,4-bisphosphate, (3) is not activated in the presence of phosphatidylinositol-3,5-bisphosphate, phosphatidylinositol-4,5-bisphosphate, phosphatidylinositol-4-phosphate, phosphatidylinositol-3-phosphate, or inositol-1,3,4,5-tetrakisphosphate (page 263, left column, Phosphorylation and activation of GST-PKBα by PDK1-page 265, left column). Alessi et al. also teach a purified extract comprising the rabbit protein kinase and the required cofactors (vesicle background containing PtdCho/PtdSer, ATP, MgAc2, buffer B, etc.) in a method to identify compounds which modulate the rabbit protein kinase activity (pages 267-269, Materials and Methods; page 264, right column, Lipid specificity of PDK1; PtdIns derivatives). Thus, Alessi et al. teach a kit comprising the rabbit protein kinase and means to carry out a method to identify compounds which modulate the rabbit protein kinase activity. While Alessi et al. do not specifically teach SEQ ID NO: 3, it is noted that the functional characteristics described by Alessi et al. are the same as those described in the specification regarding the rabbit protein kinase of the instant application. In the absence of evidence to the contrary, the rabbit protein kinase of Alessi et al. is the same as the rabbit protein kinase of the instant application. As such, it would inherently comprise SEQ ID NO: 3. Therefore, the teachings of Alessi et al. anticipate the instant claims as written.

21. Claim 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Dietrich, F.S. (PIR accession number S69657, 1996). Claim 17 is directed in part to a protein of any function comprising a fragment of the polypeptide of SEQ ID NO: 3. It is noted that a fusion protein comprising the protein kinase encompasses any protein comprising the protein kinase recited. Therefore, a fragment of the fusion protein recited in claim 17 can be interpreted as a fragment of any protein comprising the protein kinase

recited. Claim 17 is directed in part to a fusion protein comprising a fragment of any protein comprising the protein kinase recited. If the protein kinase comprises SEQ ID NO: 3, any protein comprising a fragment of SEQ ID NO: 3 would be encompassed by claim 17. Dietrich teaches a yeast protein comprising two fragments of the polypeptide of SEQ ID NO: 3. Therefore, the polypeptide of Dietrich anticipates the instant claim as written.

Double Patenting

22. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

23. Claims 1-9, 17, 28, 30-32 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2, 4, 14 of U.S. Patent No. 6734001. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons.

Claims 1-9, 17, 28, 30-32 of the instant application are directed in part to a human/rabbit 3-phosphoinositide-dependent protein kinase that comprise SEQ ID NO: 3 or SEQ ID NO: 1, fusion proteins comprising the human/rabbit 3-phosphoinositide-dependent protein kinase, and a kit comprising

the human/rabbit protein kinase or fusions thereof. Claims 1-2, 4, 14 of U.S. Patent No. 6734001 are directed to a human 3-phosphoinositide-dependent protein kinase that comprise SEQ ID NO: 1, fusion proteins comprising said protein kinase, and a kit comprising the human polypeptide of SEQ ID NO: 1. Thus, claims 1-2, 4, 14 of U.S. Patent No. 6734001 anticipate claims 1-9, 17, 28, 30-32 of the instant application as written.

Art of Interest

24. Stephens et al. (U.S. Patent No. 6682920, claims priority to provisional application 60/060190 filed on 9/17/1998) disclose a human 3-phosphoinositide-dependent protein kinase which comprises SEQ ID NO: 1 except for one mismatch at position 31. The protein kinase of Stephens et al. comprises SEQ ID NO: 3. While this reference could have been used as 102(e) art in view of the fact that the provisional application to which it claims priority discloses such protein kinase, as previously indicated, Applicant's foreign priority document, UNITED KINGDOM 9712826.8 filed on 06/19/1997, discloses the claimed invention.

Conclusion

25. No claim is in condition for allowance.

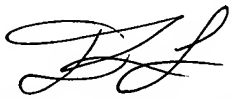
26. The cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site (www.uspto.gov), from the Office of Public Records and from commercial sources.

27. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PMR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through

Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delia M. Ramirez whose telephone number is (571) 272-0938. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Ponnathapura Achutamurthy can be reached on (571) 272-0928. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1600.



Delia M. Ramirez, Ph.D.
Patent Examiner
Art Unit 1652

DR
July 7, 2006

OM protein - protein search, using sw model

Run on: May 16, 2006, 13:24:09 ; Search time 38 Seconds
(without alignments)
40.512 Million cell updates/sec

Title: US-10-689-576-3
Perfect score: 79
Sequence: 1 ANSFVGTAQYVSPELL 16

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283416 seqs, 96216763 residues

Total number of hits satisfying chosen parameters: 283416

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : PIR_80:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	67	84.8	766	2	S69657	hypothetical prote
2	67	84.8	1081	2	S51899	probable protein k
3	66	83.5	898	2	S69634	hypothetical prote
4	64	81.0	550	2	T40486	phosphoinositide-d
5	63	79.7	592	2	T43402	probable protein k
6	61	77.2	404	2	C96549	hypothetical prote
7	60	75.9	372	2	T10202	hypothetical prote
8	60	75.9	393	1	A45100	mitogen-activated
9	60	75.9	393	1	I59571	mitogen-activated
10	60	75.9	393	1	JN0840	mitogen-activated
11	60	75.9	393	1	S42068	mitogen-activated
12	60	75.9	393	1	S46361	mitogen-activated
13	60	75.9	393	2	A45176	protein kinase Dso
14	60	75.9	395	1	S36186	mitogen-activated
15	60	75.9	397	1	S41054	mitogen-activated
16	60	75.9	400	1	A48081	mitogen-activated
17	60	75.9	401	1	I52829	mitogen-activated
18	60	75.9	428	2	T06464	protein kinase (EC
19	60	75.9	443	2	T06809	protein kinase hom
20	60	75.9	572	2	S42866	serine/threonine p
21	60	75.9	911	2	T01353	serine/threonine p
22	60	75.9	915	2	T51600	serine/threonine p
23	60	75.9	923	2	T08033	serine/threonine p
24	60	75.9	927	2	T08034	serine/threonine p
25	60	75.9	996	2	T47518	serine/threonine p
26	60	75.9	1465	2	T30891	PHY3 protein - mai
27	59	74.7	724	2	S42868	serine/threonine p
28	58	73.4	526	2	T39748	probable ser/thr p
29	58	73.4	566	2	S62482	serine/threonine p
30	58	73.4	893	2	S63378	hypothetical prote
31	57	72.2	312	2	T32446	hypothetical prote
32	57	72.2	312	2	A89460	protein H42K12.1 (
33	57	72.2	387	1	A56466	mitogen-activated
34	57	72.2	400	1	A46723	MAP kinase kinase
35	57	72.2	926	2	T48391	protein kinase-lik
36	57	72.2	934	2	T47546	protein kinase-lik
37	57	72.2	949	2	F84779	probable protein k
38	56	70.9	354	2	T04262	mitogen-activated
39	56	70.9	726	2	S22258	probable protein k
40	55	69.6	320	2	T33662	hypothetical prote
41	55	69.6	785	2	T20232	hypothetical prote
42	54	68.4	245	2	S42865	protein kinase - c
43	54	68.4	357	2	T06583	protein kinase MEK
44	54	68.4	363	2	T08542	mitogen-activated
45	54	68.4	363	2	T51735	mitogen-activated

ALIGNMENTS

RESULT 1
S69657
hypothetical protein YDR490c - yeast (Saccharomyces cerevisiae)
C;Species: Saccharomyces cerevisiae
C;Date: 22-Aug-1996 #sequence_revision 06-Sep-1996 #text_change 05-Oct-2004
C;Accession: S69657
R;Dietrich, F.S.
submitted to the EMBL Data Library, August 1995
A;Description: The sequence of S. cerevisiae cosmids 9410, 8035, 8166, and 9787.
A;Reference number: S69554
A;Accession: S69657
A;Molecule type: DNA
A;Residues: 1-766 <DIE>
A;Cross-references: UNIPROT:Q03407; UNIPARC:UPI000006A3C7; EMBL:U33050; NID:g927726; PI
C;Genetics:
A;Gene: SGD:PKH1
A;Cross-references: SGD:S0002898
A;Map position: 4R
C;Keywords: ATP
F;123-391/Domain: protein kinase homology <KIN>
F;131-139/Region: protein kinase ATP-binding motif

Query Match 84.8%; Score 67; DB 2; Length 766;
Best Local Similarity 81.2%; Pred. No. 0.0016;
Matches 13; Conservative 2; Mismatches 1; Indels 0; Gaps 0;

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Qy          1 ANSFVGTAQYVSPELL 16
              : ||||||:|||||||
Db        294 SKSFVGTAEYVSPELL 309
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RESULT 2
S51899
probable protein kinase HRC1081 (EC 2.7.1.-) - yeast (Saccharomyces cerevisiae)
N;Alternate names: protein O0784; protein YOL100w
C;Species: Saccharomyces cerevisiae
C;Date: 05-May-1995 #sequence_revision 03-Aug-1995 #text_change 05-Oct-2004
C;Accession: S51899; S59175; S66796
R;Vandenbol, M.; Durand, P.; Portetelle, D.; Hilger, F.
submitted to the EMBL Data Library, January 1995
A;Description: Sequence analysis of a 44kb DNA fragment of yeast chromosome XV includin
and a Delta.
A;Reference number: S51848
A;Accession: S51899
A;Molecule type: DNA
A;Residues: 1-1081 <VAN>
A;Cross-references: UNIPROT:Q12236; UNIPARC:UPI000004F9FC; EMBL:Z48149; NID:g663234; PI
R;Vandenbol, M.; Durand, P.; Portetelle, D.; Hilger, F.
Yeast 11, 1069-1075, 1995
A;Title: Sequence analysis of a 44 kb DNA fragment of yeast chromosome XV including the
a delta element.
A;Reference number: S59156; MUID:96076631; PMID:7502582